

Investment in Space



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Success is heavily dependent on the full Air Force competencies: rapid global mobility, aerospace superiority, global attack, precision engagement, information superiority, and agile combat support, according to the Honorable Lawrence J. Delaney, Assistant Secretary of the Air Force for Acquisition, in his 8 March 2000 testimony to the Defense Subcommittee of the House Appropriations Committee (HAC-D) on the fiscal year (FY) 2001 budget for Air Force acquisitions. And, as the Air Force continues its transformation from a Cold War fighting force to a light, lean, and lethal expeditionary aerospace force, it is the Air Force's Modernization program that must fill the role as the critical enabler for achieving this vision. In a constrained budgetary environment where the Air Force's stated priorities are people first, combat readiness, then modernization and infrastructure, to successfully modernize our equipment, it's essential to leverage upon technology to support the expeditionary aerospace force and enhance combat effectiveness. The Air Force modernization program attempts to do this while integrating and balancing against competing priorities—making the difficult choices as to which systems should be upgraded or modified, which select few new weapon systems should be pursued, and which critical technologies should be invested in to enable the development of more advanced systems of the future. Space programs support most of the Air Force's core competencies and are critical to building our aerospace forces. As such, these programs demand modernization funding to leverage our unique capabilities and enhance the harmonization between space and air capabilities.

In the FY01 budget request, 40 percent of Air Force's \$72 billion total obligation authority (TOA) was requested for modernization programs. Of this amount, 31 percent is allocated for the modernization of Air Force space programs. This amount favorably compares with the 36 percent the Air Force allotted for modernization of attack platforms—which includes the high-valued, high-priced requests for the F-22 air superiority fighter and the development of the next generation Joint Strike Fighter (JSF). Couple this with the fact that Space garnered an over one percent increase in TOA in FY01 over FY00 funding levels—an increase which represents over a billion dollars—indicates that the Air Force is very serious about integrating space forces and capabilities into the previously air-dominated battle plan.

In the Air Force's FY01 budget request, our investment in space modernization is weighted toward a handful of key programs: the Space-Based Infrared System (SBIRS) to enhance the aerospace superiority core competency; the Global Positioning System (GPS) and Military Satellite Communications (MILSATCOM) for information dominance; the Evolved Expendable Launch Vehicle (EELV) for rapid global mobility, and the Spacelift Range System to modernize our space launch infrastructure. These space modernization programs are discussed further below.

Aerospace Superiority

SBIRS is one of the keys to prosecute the full spectrum dominance required to achieve aerospace superiority. SBIRS is a system of systems that will provide early warning against long range missile attacks to both national and theater commanders. With over \$810 million in investment dollars requested in FY01, SBIRS consists of both high and low spaceborne components that will improve our ability to detect, track, and characterize missile attacks. These capabilities will provide our warfighters the critical information necessary to acquire targets, cue and track target data to interceptors, and perform theater battle management. The SBIRS constellation will include spacecraft orbiting in highly elliptical (HEO), geosynchronous (GEO), and low earth (LEO) regimes that will receive and transmit data to an integrated ground system. The SBIRS will then be fielded over four increments. Increment 1 consolidates the Defense Support Program (DSP)—the legacy infrared missile warning system—ground processing with SBIRS into a master control station located at Buckley AFB near Denver, Colorado. Increment 2 will consist of two HEO sensors to be hosted on another satellite system and four GEO satellites with initial launch in FY04. Increment 3 will be comprised of 24 LEO satellites with first launch planned in FY06. And finally, Increment 4 will include a review of the entire system for optimization and additional requirements definition for further deployment of SBIRS spacecraft.

The United States Air

Force is moving toward

the 21st Century as a

seamless, integrated

aerospace force. The Air

Force is committed to

continue the integration

of air and space.

—General Michael E. Ryan, USAF
Chief of Staff

Information Superiority

Information superiority will be critical to the success of any of our future military operations as it will allow our warfighters the ability to collect, process, and disseminate uninterrupted flow of information while exploiting or denying our enemies' ability to do the same. Two space modernization programs the Air Force is heavily investing in FY01 are the GPS and MILSATCOM. GPS provides continuous position, velocity, and timing data regardless of weather conditions to an unlimited number of users worldwide. As GPS-provided navigation information is either integrated or will be integrated into practically every facet of modern warfare, the Air Force FY01 budget request includes over \$450 million to modernize GPS systems and field GPS upgrades that will ensure continued access by US and allied military forces across the spectrum of conflict, while denying its use by adversaries and preserving its use by the civil sector outside of the theater/region of operations. To this end, GPS modernization efforts in FY01 include the addition of a new military code that will allow exclusive use of precise navigation data during conflict, two additional civilian codes, and a high power spot beam for future satellites that will significantly increase protection against jamming of GPS signals. Once completed, the modernization effort will provide secure, worldwide navigation and timing for all of our weapons systems.

Also critical to military operations and information dominance, MILSATCOM systems—primarily the Defense Satellite Communications System (DSCS) and Milstar—provide commanders the secure and reliable means to communicate with leadership around the world. Another MILSATCOM system—Global Broadcast Service (GBS)—will provide direct broadcast of digital, multimedia, high bandwidth video, and imagery data directly to warfighters deployed in theater. Wideband Gapfiller Satellites (WGS) will augment existing DSCS and GBS capabilities by increasing the communications throughput capacity starting in FY04. Currently in development are the Advanced Wideband System that will replace DSCS, WGS, and GBS starting in FY09 and the Advanced Extremely High Frequency (AEHF) system that will be the replacement system to the current Milstar medium and low data rate satellite system. The first launch of AEHF was recently accelerated one year to FY05 in order to mitigate impacts of the failed FY99 launch of the third Milstar satellite. All told, over \$800 million is budgeted for MILSATCOM modernizations in the FY01 request.

Rapid Global Mobility

Rapid Global Mobility is being enhanced through our ability to rapidly gain access to space. This is being done through the development and deployment of the EELV. With its modernized and more automated launch pads and operations, EELV will allow a magnitude reduction in launch pad processing time—from two to six months for current launch systems to just one to nine days—and cost reductions of up to 25 percent over legacy launch systems. The cycle time improvements will be made possible through enhanced payload processing flows and standardized spacecraft interface specifications, which will allow more expeditious, common payload-to-booster mating and integration timelines. Two contractors—Boeing and Lockheed Martin—are individually developing and producing two separate families of EELVs. The Boeing launch system—the Delta IV family of launchers—will be propelled by the new Boeing-Rocketdyne developed RS-68 liquid hydrogen-liquid oxygen engine. The RS-68 represents the first liquid propellant rocket engine developed in the US since the Space Shuttle main engine was developed in the early 1970s. The Lockheed Martin launch system—the Atlas V family—features the Energomash RD-180 liquid oxygen-kerosene engine. The RD-180 is a derivative of the proven RD-170 engine, which was developed and is currently used by the Russian space program. The initial DoD launch of EELV is scheduled for FY02, launching a DSCS satellite from Cape Canaveral. The FY01 budget request includes \$621 million to continue the EELV development program and to procure three EELVs planned for launch in FY03.

Also contributing to our assured and rapid access to space are the modernization efforts being pursued in our space launch infrastructure. Our Eastern Spacelift Range at Patrick AFB and Western Spacelift Range at Vandenberg AFB provide launch tracking, telemetry, communications, and flight analysis required to conduct successful space launch operations by the DoD, civil, and commercial communities. As our Spacelift Ranges are outmoded and expensive to operate and maintain, the Air Force is undertaking a large scale infrastructure modernization program that will standardize and automate the launch ranges. These efforts will improve spacelift range turnaround time to the degree it will be measured in hours, compared to days for current ranges, while reducing O&M costs by 20 percent. \$146 million was requested in the FY01 budget for modernization of the Spacelift Ranges.

Summary

As Space heavily contributes towards our ability to master the core competencies Dr Delaney discussed in his testimony to the HAC-D, the Air Force's success in fulfilling our national security role, now and in the future, is highly dependent on our ability to modernize our space programs. As space forces and capabilities are becoming more integrated and institutionalized, modernization of space assets will enable us to improve upon our full spectrum of aerospace capabilities and continue as the premier Air Force in the world. The FY01 budget request puts us well on the road to doing this.